



U.S. ARMY CHEMICAL  
MATERIALS AGENCY

# FACT SHEET

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## Umatilla Chemical Depot

### Umatilla Chemical Agent Disposal Facility Phase 2 Quantitative Risk Assessment

The 2002 Phase 2 Quantitative Risk Assessment (QRA) estimates health risks to facility workers and the public associated with the storage and disposal of chemical agent at the Umatilla Chemical Agent Disposal Facility (UMCDF). Specifically, the study evaluates the risk of accidents that cause fatalities and, for mustard agent, cancer. The QRA supports the Army's top priority of keeping the public and its workers safe.

The main purpose of the QRA is to understand the risks from accidents during disposal operations, projected to take place over six years. As a comparison, the QRA also estimates the risks from accidents during storage of agent in the absence of a disposal program. The risk results show that, overall, storage poses a much greater risk than disposal.

The QRA expresses risks to the public in a number of ways. Below are two common expressions of risk: each individual's chance of fatality from an accidental release of chemical agent, and the chance of incurring one or more public fatalities from such an accident.

#### Individual Risk of Fatality

An individual's risk of fatality from a release of agent depends on where he or she lives. Those living closer to the depot, for example, face a higher risk on average than those living farther away. Other factors, such as weather patterns and topography, also influence risk.

The QRA estimates the average per-year risk during disposal for individuals living near the depot as follows:

- within three miles: 1 in 300,000 chance per year during disposal, affecting about 50 residents
- three to five miles: 1 in 300,000 chance per year during disposal, affecting about 3,800 residents
- five to nine miles: 1 in 900,000 chance per year during disposal, affecting about 26,000 residents

#### Comparison of Stockpile Fatality Risks with Accidental Fatality Risks

| Risk of Death in<br>U.S. per Person<br>per Year | Cause of<br>Accidental Death   |
|---|--|
| 160 in a million                                | Motor vehicle accidents  |
| 28 in a million                                 | Accidental poisoning   |
| 22 in a million                                 | Pedestrian struck by vehicle   |
| 5 in a million                                  | Choking on food  |
| 4 in a million                                  | Chemical weapons storage for<br>people within 3 miles of depot<br>(per year until disposal starts) |
| 2 in a million                                  | Disposal operations for people<br>within 3 miles of depot (per<br>year for 7 years)                |
| Less than 1 in a million                        | Chemical weapons storage for<br>people 7 miles from depot (per<br>year until disposal starts)      |
| Less than 1 in 10 million                       | Disposal operations for people<br>7 miles from depot (per year for<br>7 years)                     |

(source for accident risks: National Safety Council,  
1995 statistics)

For more information,  
contact the

#### Umatilla Chemical Disposal Outreach Office

190 E. Main St.  
Hermiston, OR 97838  
Phone: (541) 564-9339  
Fax: (541) 564-9532

or contact the

#### Public Affairs Office

(541) 564-5312

or the

#### CMA Public Affairs Office

(800) 488-0648

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## Umatilla Chemical Agent Disposal Facility Phase 2 Quantitative Risk Assessment (continued)

During disposal operations, much of the risk comes from storage awaiting disposal, not the disposal process. For example, in the three-to-five mile ring, over 95 percent of the risk is due to storage.

As a comparison, the QRA estimates individual risk due to continued storage without disposal as follows:

- within three miles: 1 in 300,000 per year indefinitely
- three to five miles: 1 in 2 million per year indefinitely
- five to nine miles: 1 in 3 million per year indefinitely

Although the annual risk from storage without disposal is less than the annual risk from disposal for those within nine miles, the total risk over the long run is greater from storage, since storage risk continues indefinitely until disposal begins.

### Risk of Public Fatalities

Unlike individual risk, the risk of public fatalities is related to population size. For example, there are more deaths from car accidents in a large city than in a small town. The risk of a release that causes one or more fatalities among the population living within 63 miles of the depot is as follows:

- 1 in 1,300 chance over the six-year disposal period

The risk shown includes the risk from disposal operations and storage awaiting disposal. Of this total risk, 40 percent is due to storage awaiting disposal. Once disposal is complete, all risk is eliminated.

As a comparison, the QRA estimates the chance of one or more public fatalities from storage without disposal as follows:

- 1 in 280 chance over 20 years of storage

The QRA also estimates cancer risks from mustard agent. The estimates for cancer risk for individuals living within three miles of the depot is as follows:

- 1 in 2 billion chance per year during disposal processing
- 1 in 300 billion chance per year indefinitely for storage without disposal

The individual cancer risk outside of the three-mile area is considered minimal.

The main storage risk comes from earthquakes, which account for 97 percent of all storage risk. Facility fires from human or natural causes account for 93% of disposal risk. The risks from terrorism are not included in the QRA risk estimates and are unavailable for release at this time.

The Phase 2 QRA is an update of the 1996 Phase 1 QRA, and uses state-of-the-art risk methods and up-to-date information on the disposal facility. The study is part of a larger risk management program, which assesses potential risks to workers (including industrial and occupational hazards), the public, and the environment. Risk management at the UMCDF also includes developing and implementing plans to reduce and manage risks.

The QRA was performed by Science Applications International Corporation (SAIC) in accordance with the requirements of the American National Standards Institute/American Society for Quality Control. In addition, the UMCDF Citizens' Advisory Council, local experts and a panel of QRA specialists reviewed the QRA.

To find out more about the Phase 2 QRA, contact the CMA Public Affairs Office at (800) 488-0648.